



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,560	10/24/2003	Koji Horio	MIT-044-USA-P	7514
27955	7590	06/15/2007		
TOWNSEND & BANTA c/o PORTFOLIO IP PO BOX 52050 MINNEAPOLIS, MN 55402			EXAMINER GOLDBERG, JEANINE ANNE	
			ART UNIT	PAPER NUMBER
			1634	
			MAIL DATE	DELIVERY MODE
			06/15/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/691,560

**Applicant(s)**

HORIO ET AL.

**Examiner**

Jeanine A. Goldberg

**Art Unit**

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 14,15,18 and 20-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-18,20-30,33 and 39 is/are rejected.
- 7) ☒ Claim(s) 31,32,34-38,40 and 41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This action is in response to the papers filed March 19, 2007. Currently, claims 14-15, 18, 20-41 are pending.
2. All arguments have been thoroughly reviewed but are deemed non-persuasive for the reasons which follow. Any objections and rejections not reiterated below are hereby withdrawn.
3. This action contains new grounds of rejection necessitated by amendment.
4. This action is FINAL.

***Election/Restrictions***

5. Applicant's election without traverse of Group II, Claims 14-25 in the paper filed December 19, 2005 is acknowledged.

The requirement is still deemed proper and is therefore made FINAL.

***Priority***

6. This application claims priority to Japanese application 2002-314333, filed October 29, 2002.

***Drawings***

7. The drawings are acceptable.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 14-15, 18, 22, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coleman et al. (US Publication 2002/0160367, October 31, 2002).

Coleman teaches a coated film laminate having ionic surface. Coleman teaches a first board having a front surface, i.e. item 12 of Figure 1. Coleman further teaches a thin polymeric gel film formed on the front surface of the board having depressions and projections, ie. The surface coating may include a hydrogel (para 48). The hydrogel provides a porous surface coating capable of absorbing (para 48). Coleman teaches the coating and laminate are size altered using the application of heat (para 58). Coleman teaches an ablation layer formed on the surface which includes polyethylenes (para 44)(limitations of Claim 15, 22). Coleman teaches a surface coating may be an ionic polymer coating which includes polymers and copolymers made from amine-containing monomers such as 2-vinylpyridine, 3-vinylpyridine, 4-vinylpyridine, (3-acrylamidopropyl)trimethylammonium chloride, 2-diethylaminoethyl acrylate, 2-diethylaminoethyl methacrylate, 3-dimethylaminopropyl acrylate, 3-dimethylaminopropyl methacrylate, 2-aminoethyl methacrylate, dimethylaminoethyl acrylate and methacrylate, 2-acryloxyethyltrimethylamm- onium chloride, diallyldimethylammonium chloride, 2-methacryloxyethyltrime- thylammonium chloride, 3-methacryloxy-2-hydroxypropyltrimethylammonium chloride, 3-aminopropylmethacrylamide, dimethylaminoethyl methacrylamide, dimethylaminopropyl acrylamide, and other similarly substituted acrylamides and methacrylamides; 4-vinylbenzyltrimethylammonium chloride, 4-vinyl-1-methylpyridinium bromide, ethylene

imine, lysine, allylamine, vinylamine, nylons and chitosan (para 47)(limitations of Claim 18).

Coleman teaches the relaxation and shrinkage of the substrates may be 25%-75% reduction (para 56).

Coleman further teaches that the substrate has oligonucleotides affixed to the substrate to allow subsequent DNA hybridization with the oligonucleotides (para 58).

With regard to the pitches and dimensions of the projections or depressions, Coleman teaches the shrinkage is routinely optimizable based upon the desired parameters. Coleman teaches that the substrate may be shrunked for a reduction of 25%-75% which would encompass projections and depressions having a pitch within the range from 0.1 um to 10um. As noted in *In re Aller*, 105 USPQ 233 at 235,

More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

Coleman does not specifically teach a second board disposed opposite the thin polymeric film.

However, the ordinary artisan at the time the invention was made would have been motivated to have placed the substrate into a holder to allow hybridization assays. The ordinary artisan would have been motivated to have enclosed the substrate to allow control of the environment and containment of buffers, liquids and samples during the reactions.

#### **Response to Arguments**

The response traverses the rejection. The response asserts that Coleman reference is not prior art against the present application because publication date of Coleman is October 31, 2002. This argument has been considered but is not convincing because the 102(e) type date for Coleman is April 30, 2001 which is prior to the foreign priority date of the instant foreign priority.

The response further asserts that the processes and films of the instant invention are fundamentally different from Coleman (page 17 of response filed March 19, 2007). This argument has been reviewed but is not persuasive. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (see MPEP 2111.02). The claims are drawn to an apparatus comprising a first board, a thin polymeric gel film, a heating means and a second board (see claim 14). The intended use and process limitations for "a region of the thin polymeric gel film is heated and vaporized to shoot a fragment of the base sequence text sample from the first board to a front surface of the second board" does not further limit the structure of the claimed product.

The response further asserts that Coleman does not teach an apparatus with the same intended use as the instant specification's intended use. This argument has been reviewed but the intended use does not carry patentable weight in the absence of structural differences.

Thus for the reasons above and those already of record, the rejection is maintained.

**New Grounds of Rejection Necessitated by Amendment**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 14-18, 20-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Antwerp et al. (US Pat. 6,413,393, July 2, 2002).

A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (see MPEP 2111.02).

Van Antwerp teaches an apparatus comprising a cover, a base and a functional coating layer comprising a UV- absorbing polymer (abstract). Van Antwerp teaches the sensor includes a base layer, a cover layer and a sensor element disposed the base and the cover layers (i.e. a first and second board disposed in opposite of the front surface)(limitations of Claim 14, 15). The base and the cover are made of an insulative



material such as a polyimide (col. 2, lines 65-67). The sensors comprise sensor elements which may have thin film conductors formed between an underlying insulative thin film base layer and an overlying insulative thin film cover layer (col. 8, lines 40-45). The sensor further comprises electrodes (i.e. heating means)(col. 8, lines 40-45).

A polished glass plate may be used for the upper surface, a surface for transmitting light. Alternative substrates include steel, aluminum, and plastic materials (col. 8, lines 55-65)(limitations of Claim 22).

Van Antwerp teaches useful UV-absorbing polymers including polytetramethylene ether glycol (PTMEG) (col. 5, lines 35-45). Van Antwerp teaches the amount of UV absorbing monomer polymers may be used to stiffer and more brittle polymers (col 7, lines 15-20). Van Antwerp teaches the layer is sufficiently UV-absorbing to permit the layer to be cut using a source of UV radiation such as a laser (col. 4, lines 40-45)(limitations of Claim 20). The UV absorbing polymer may be polymethacrylate (col. 11, lines 13-17)(limitations of Claim 18, 25).

Therefore, Van Antwerp teaches every limitation of the claimed invention.

10. Claims 14-18, 20-25, 30, 33, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Sosnowski et al. (US Pat. 6,051,380, April 18, 2000).

Sosnowski teaches a micro-machined device with permeation and attachment layers can be formed using functionalized hydrophilic gels, membranes, or other suitable porous materials. The permeation layer allows attachment of nucleic acids to permit immobilization but also separates the attached oligonucleotides and hybridized

Art Unit: 1634

target DNA sequences from the highly reactive electrochemical environment generated immediately at the electrode surface. Permeation layer materials can include but are not limited to: metal oxides, membranes, agarose, polyacrylamides, hydrogels, sol-gels, aero-gels, porous glass, porous silicon, cross linked polymers, etc. The thickness of the combined permeation and attachment layers ranges from 10 .mu.m to 30 mm. For example, a modified hydrophilic gel of 20% to 35% polyacrylamide (with 0. 1% polylysine), can be used to partially fill (.about.0.5 mm) each of the individual microlocation chambers in the device. These concentrations of gel form an ideal permeation layer with a pore limit of from 2 mn to 10 nm. Further, Sosnowski teaches that "chips were mounted on a micromanipulator stage and the microelectrodes activated by a power supply and appropriately controlled relay switches. Fluorescently labeled oligonucleotides on the chip were visualized using oblique illumination with two 594 nm HeNe lasers and the images were quantified using either NIH Image or IPLab Spectrum software packages." Sosnowski thus teaches the presence of a laser in the device.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1634

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Jeanine Goldberg whose telephone number is (571) 272-0743. The examiner can normally be reached Monday-Friday from 7:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on (571) 272-0735.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

The Central Fax Number for official correspondence is (571) 273-8300.



**Jeanine Goldberg**

**Primary Examiner**

June 11, 2007